

DETAILED ACTION

This office action is "Corrected Notice of Allowance".

EXAMINER'S AMENDMENT

An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it MUST be submitted no later than the payment of the issue fee.

Authorization for this examiner's amendment was given in a telephone interview with Hyung Sohn on 02/16/2011.

1. (Currently amended) A method for providing diversity handover, (DHO), related instructions to a first DHO tree node that is a part of or is planned to be a part of a DHO connection in a mobile telecommunication network, wherein the DHO functionality is distributed to one or a plurality of DHO nodes, including a Radio Network Controller, (RNC), and its connected Node Bs, in the network, the method comprising:

a DHO node including in a first signaling message one or more transport layer addresses and one or more transport bearer reference parameters in order to direct one or more data flows between the RNC and a mobile station of the DHO connection, and

the DHO node sending the first signaling message to the first DHO tree node,

wherein the DHO functionality performed by the first DHO tree node comprises splitting of downlink data flows and combining of uplink data flows,

wherein the first DHO tree node is separate from the RNC, and

wherein the including-step comprises the DHO node replacing the transport layer address and transport bearer reference parameter of the RNC by transport layer address and transport bearer reference parameter of a DHO tree node that is hierarchically different than the first DHO tree node in a regular signaling message sent to the first DHO tree node in order to direct a data flow between the first DHO tree node and the different DHO tree node in a DHO tree node hierarchy.

2. (Previously presented) The method according to claim 1, wherein the including-step comprises:

the DHO node replacing the transport layer address and transport bearer reference parameter of the RNC by transport layer address and transport bearer reference parameter of a DHO tree node that is hierarchically higher than the first DHO tree node in a regular signaling message sent to the first DHO tree node in order to direct a data flow between the first DHO tree node and the higher DHO tree node in a DHO tree node hierarchy.

3. (Previously presented) The method according to claim 1, wherein the including-step comprises:

the DHO node including one or more transport layer addresses and one or more transport bearer reference parameters of one or more DHO tree node(s) that are hierarchically lower than the first DHO tree node in a signalling message sent to the first DHO tree node in order to direct the one or more data flows between the first DHO tree node and the one or more lower DHO tree node(s) in a DHO tree node hierarchy.

4. (Previously presented) The method according to claim 1, wherein said transport layer addresses are IP addresses and said transport bearer reference parameters are User Datagram Protocol (UDP) ports.

5. (Previously presented) The method according to claim 1, wherein said transport layer addresses are ATM addresses and said transport bearer reference parameters are Served User Generated Reference (SUGR) parameters.

6. (Previously presented) The method according to claim 1, further comprising:

the DHO node including in the first signaling message Quality of Service (QoS) indications for the one or more data flow(s) to be directed.

7. (Previously presented) The method according to claim 1, further comprising:

the DHO node including timing parameters in the first signaling message to be used in the uplink combining procedure in the DHO tree node receiving the first signaling message.

8. (Previously presented) The method according to claim 1, further comprising:

the DHO node including a time indication in the first signaling message indicating when the DHO related instructions in the first signaling message are to be effectuated in the DHO tree node receiving the first signaling message.

9. (Previously presented) The method according to claim 8, wherein said time indication is a connection frame number (CFN) pertaining to a Dedicated Channel Frame Protocol (DCH FP) in a UMTS Terrestrial Radio Access Network (UTRAN).

10. (Previously presented) The method according to claim 1, wherein said first signaling message is sent from the RNC.

11. (Previously presented) The method according to claim 10, wherein said first signaling message is a Node B Application Part (NBAP) message.

12. (Previously presented) The method according to claim 10, wherein the step of sending said first signaling message is triggered by a second signaling message received from a second RNC.

13. (Previously presented) The method according to claim 12, wherein the second signaling message is a Radio Network Subsystem Application Part (RNSAP) message.

14. (Previously presented) The method according to claim 12, wherein the second signaling message includes the same DHO related instructions and associated parameters as said the signaling message.

15. (Previously presented) The method according to claim 14, wherein the second signaling message further includes a destination node transport layer address of the first DHO tree node that is an intended recipient of the DHO related instructions.

16. (Previously presented) The method according to claim 15, wherein the destination node transport layer address is an IP address.

17. (Previously presented) The method according to claim 15, wherein the destination node transport layer address is an ATM address.

18. (Previously presented) The method according to claim 1, wherein the mobile telecommunication network is a UMTS network.

19. (Previously presented) The method according to claim 1, further comprising:

the DHO node using implicit information at the first DHO tree node in data received from a hierarchically lower DHO tree node to trigger an initiation of DHO functionality for a macro diversity leg towards the hierarchically lower DHO tree node.

20. (Currently amended) The method according to claim 19, wherein the implicit information comprises a source IP addresses and a source User Datagram Protocol (UDP) port retrieved from an IP header and a UDP header of a received uplink packet.

21. (Currently amended) The method according to claim 20, wherein the source IP address is different from a addresses used for packets received from a hierarchically higher DHO tree node and other hierarchically lower DHO tree

nodes than the hierarchically lower DHO tree node from which the uplink packet was received.

22. (Previously presented) The method according to claim 20, further comprising:

the DHO node using the retrieved source IP address and User Datagram Protocol (UDP) port at the first DHO tree node as destination IP address and destination UDP port for the split downlink data flow for the macro diversity leg towards the hierarchically lower DHO tree node.

23. (Previously presented) The method according to claim 1, further comprising:

the DHO node terminating the DHO functionality at the first DHO tree node for a macro diversity leg towards a hierarchically lower DHO tree node based on an absence of expected uplink data packets from a hierarchically lower DHO tree node.

24. (Previously presented) The method of claim 1, further comprising:

the DHO node terminating the DHO functionality at the first DHO tree node for a macro diversity leg towards a hierarchically lower DHO tree node based on a reception of an indication that a hierarchically lower DHO tree node no longer uses the macro diversity leg.

25. (Previously presented) The method of claim 24, wherein said indication is a Destination Unreachable Internet Control Message Protocol (ICMP) message.

26. (Currently amended) A non-transitory computer program product directly loadable into the internal memory of a computer within a Diversity Handover node (DHO) including a Radio Network Controller or a Node B, in a mobile telecommunication network, wherein a computer program is provided therein, the computer program comprising the software code portions to causing the RNC or the Node B to perform the method of claim 1.

27. (Currently amended) A non-transitory computer readable medium, in which a readable program is recorded therein, the readable program causes a computer, within a Diversity Handover node including a Radio Network Controller or a Node B, in a mobile telecommunication network, to control an execution of the method of claim 1.

28. (Currently amended) A Radio Network Controller, (RNC), for providing diversity handover, (DHO), related instructions to a first DHO tree node that is a part of or is planned to be a part of a DHO connection in a mobile telecommunication network, wherein the DHO functionality is distributed to

one or a plurality of DHO nodes the RNC and its connected Node Bs, in said network, the RNC comprising:

means for including in a first signaling message one or more transport layer addresses and one or more transport bearer reference parameters in order to direct one or more data flows between the RNC and a mobile station of the DHO connection; and

means for sending the first signaling message to the first DHO tree node, wherein the DHO functionality performed by the first DHO tree node comprises splitting of downlink data flows and combining of uplink data flows,

wherein the first DHO tree node is separate from the RNC, and

wherein the means for including comprises means for replacing the transport layer address and transport bearer reference parameter of the RNC by transport layer address and transport bearer reference parameter of a DHO tree node that is hierarchically different than the first DHO tree node in a regular signaling message sent to the first DHO tree node in order to direct a data flow between the first DHO tree node and the different DHO tree node in a DHO tree node hierarchy.

29. (Previously presented) The RNC according to claim 28, wherein the means for including comprises:

means for replacing the transport layer address and transport bearer reference parameter of the RNC by transport layer address and transport

bearer reference parameter of a DHO tree node that is hierarchically higher than the first DHO tree node in a regular signaling message sent to the first DHO tree node in order to direct a data flow between the first DHO tree node and the higher DHO tree node in a DHO tree node hierarchy.

30. (Previously presented) The RNC according to claim 28, wherein the means for including comprises:

means for including one or more transport layer addresses and one or more transport bearer reference parameters of one or more DHO tree node(s) that are hierarchically lower than the first DHO tree node in a signalling message sent to the first DHO tree node in order to direct one or more data flows between the first DHO tree node and said one or more lower DHO tree node(s) in a DHO tree node hierarchy.

31. (Previously presented) The RNC according to claim 28, wherein the transport layer addresses are IP addresses and the transport bearer reference parameters are User Datagram Protocol (UDP) ports.

32. (Previously presented) The RNC according to claim 28, wherein the transport layer addresses are ATM addresses and the transport bearer reference parameters are Served User Generated Reference (SUGR) parameters.

33. (Previously presented) The RNC according to claim 28, further comprising:

means for including in the first signaling message Quality of Service (QoS) indications for the one or more data flow(s) to be directed.

34. (Previously presented) The RNC according to claim 28, further comprising:

means for including timing parameters in the first signaling message to be used in the uplink combining procedure in the DHO tree node receiving the first signaling message.

35. (Previously presented) The RNC according to claim 28, further comprising:

means for including a time indication in the signaling message indicating when the DHO related instructions in the signalling message are to be effectuated in the DHO tree node receiving the first signaling message.

36. (Previously presented) The RNC according to claim 35, wherein the time indication is a connection frame number (CFN) pertaining to a Dedicated Channel Frame Protocol (DCH FP) in a UMTS Terrestrial Radio Access Network (UTRAN).

37. (Previously presented) The RNC according to claim 28, wherein the first signaling message is a Node B Application Part (NBAP) message.

38. (Previously presented) The RNC according to claim 28, wherein the means for sending the first signaling message is triggered by a second signaling message received from a second RNC.

39. (Previously presented) The RNC according to claim 38, wherein the second signaling message is a Radio Network Subsystem Application Part (RNSAP) message.

40. (Previously presented) The RNC according to claim 38, wherein the second signaling message includes the same DHO related instructions and associated parameters as the first signaling message.

41. (Previously presented) The RNC according to claim 40, wherein the second signaling message further comprises a destination node transport layer address of the first DHO tree node that is the intended recipient of the DHO related instructions.

42. (Previously presented) The RNC according to claim 41, wherein the destination node transport layer address is an IP address.

43. (Previously presented) The RNC according to claim 41, wherein the destination node transport layer address is an ATM address.

44. (Previously presented) The RNC according to claim 28, wherein the mobile telecommunication network is a UMTS network.

45. (Currently amended) A Diversity Handover, (DHO), node that is a part of or is planned to be a part of a DHO connection in a mobile telecommunication network, wherein the DHO functionality is distributed to one or more DHO nodes including a Radio Network Controller, (RNC), and its connected Node Bs, in the network, the DHO node comprising:

means for using implicit information in data received from a hierarchically lower DHO tree node to trigger an initiation of the DHO functionality for a macro diversity leg towards the hierarchically lower DHO tree node, wherein the DHO functionality performed by the DHO node comprises splitting downlink data flows from the RNC to a mobile station and combining uplink data flows from the mobile station to the RNC,

wherein the DHO node is separate from the RNC,

wherein the implicit information comprises a source IP address and a source User Datagram Protocol (UDP) port retrieved from an IP header and an UDP header of a received uplink packet, and

wherein the source IP address is different from a source IP address used for packets received from a hierarchically higher DHO tree node and other hierarchically lower DHO tree nodes than the hierarchically lower DHO tree node from which the uplink packet was received.

46. (Cancelled)

47. (Cancelled)

48. (Currently amended) The DHO node according to claim 45, further comprising:

means for using the retrieved source IP address and UDP port as the destination IP address and destination UDP port for the split downlink data flow for the macro diversity leg towards said hierarchically lower DHO tree node.

49. (Previously presented) The DHO node according to claim 45, further comprising:

means for terminating the DHO functionality for a macro diversity leg towards a hierarchically lower DHO tree node based on an absence of expected uplink data packets from the hierarchically lower DHO tree node.

50. (Previously presented) The DHO node of claim 45, further comprising:
means for terminating the DHO functionality for a macro diversity leg
towards a hierarchically lower DHO tree node based on a reception of an
indication that the hierarchically lower DHO tree node no longer uses the
macro diversity leg.

51. (Previously presented) The DHO node of claim 50, wherein said
indication is a Destination Unreachable Internet Control Message Protocol
(ICMP) message.

Allowable Subject Matter

The following is an examiner's statement of reasons for allowance:

Claims 1-45 and 48-51 are allowed in view of applicant's Remarks filed on
12/29/2009 and examiner amendment attached hereto.

With regard to claims 1, 26-28 and 45 the closest prior art record of record Kekki
et al. (US 2003/0099255 A1) teaches a method for providing diversity handover, DHO,
related instructions to a first DHO tree node that is a part of or is planned to be a part of
a DHO connection in a mobile telecommunication network, wherein the DHO
functionality is distributed to one or a plurality of DHO nodes, including a Radio Network
Controller (RNC) and its connected Node Bs, in the network, the method comprising:

a DHO node including in a first signaling message one or more transport layer addresses and one or more transport bearer reference parameters in order to direct one or more data flows between the RNC and a mobile station of the DHO connection, and the DHO node sending the first signaling message to the first DHO tree node, wherein the DHO functionality performed by the first DHO tree node comprises splitting of downlink data flows and combining of uplink data flows.

Kekki et al. alone or in combination **fails to teach or fairly suggest**

wherein the first DHO tree node is separate from the RNC, and wherein the including-step comprises the DHO node replacing the transport layer address and transport bearer reference parameter of the RNC by transport layer address and transport bearer reference parameter of a DHO tree node that is hierarchically different than the first DHO tree node in a regular signaling message sent to the first DHO tree node in order to direct a data flow between the first DHO tree node and the different DHO tree node in a DHO tree node hierarchy.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to KIET DOAN whose telephone number is (571)272-7863. The examiner can normally be reached on 9-5.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Charles Appiah can be reached on 571-272-7904. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Kiet Doan/
Examiner, Art Unit 2617